July 23, 2008

MEMORANDUM TO: Mark Henry Salley, Chief
Fire Research Branch
Division of Risk Analysis
Office of Nuclear Regulatory Research

FROM: Kendra L. Hill, Reliability and Risk Engineer ***/RA/***
Fire Research Branch
Division of Risk Analysis
Office of Nuclear Regulatory Research

SUBJECT: NOTICE OF NUCLEAR REGULATORY COMMISSION-OFFICE OF NUCLEAR REGULATORY RESEARCH/ELECTRIC POWER RESEARCH INSTITUTE (NRC-RES/EPRI) COURSE ON FIRE PROBABILISTIC RISK ASSESSMENT

DATE AND TIME: Session I:
Monday, September 29 (8am-5pm) through Thursday, October 2, 2008 (8am – 4pm)

Session II:
Monday, November 17 (8am – 5pm) through Thursday, November 20, 2008 (8am-4pm)

LOCATION: Hyatt Regency Bethesda
One Bethesda Metro Center
Bethesda, MD 20814

REGISTRATION: http://www.nrc.gov/public-involve/conference-symposia/epri-fire-pra-course/epri-fire-pra-course-info.html

CONTACT: Kendra L. Hill, RES/DRA
301-415-5456

PURPOSE: The U.S. Nuclear Regulatory Commission (NRC) Office of Nuclear Regulatory Research (RES), in cooperation with the Electric Power Research Institute (EPRI), will hold a joint training course on fire probabilistic risk assessment (PRA). Since 2002, RES and EPRI, under a Memorandum of Understanding (MOU) on Cooperative Nuclear Safety Research, have been developing state-of-the-art methods for conduct of fire PRA. In September 2005, this work produced the "NRC-RES/EPRI Fire PRA Methodology for Nuclear Power Facilities," NUREG/CR-6850 (EPRI 1011989). The course covers this state-of-the-art methodology.

The NRC-RES and EPRI jointly conducted two general workshops on this methodology in 2005 and 2006. Over 200 representatives from the industry and government, within and outside the U.S., have attended these workshops. A detailed fire PRA training was conducted in 2007.

The training material presented this year will be very similar to the material presented in 2007. It will provide in-depth technical presentations and hands-on sample problem(s) intended for the users of this methodology. This course is offered in 3 technical area modules to maximize transfer of the relevant technology to the people who need it.

The structure of this course is as follows:

Module 1: PRA/HRA - This module covers the technical tasks for the development of both the system and operator response to a fire. Specifically this module covers NUREG/CR-6850 (EPRI 1011989), Volume 2, Sections 2, 4, 5, 7, 12, 14, and 15. This module is suited for PRA practitioners responsible for the systems modeling and human reliability analysis (HRA) aspects of the FPRA. The course will be conducted with the assumption that students have the following knowledge and skills:

- A general knowledge of PRA and HRA as applied to nuclear power plants, including typical approaches, modeling techniques often applied (event trees, fault trees, interfaces between PRA and HRA), and the quantification of PRA models
- Some familiarity with plant systems typically found in nuclear power plants. A simplified, but reasonably realistic example of a few plant systems will be used to demonstrate the methodology
- Some familiarity with piping and instrumentation diagrams (P&IDs) and their use in developing PRAs

Module 2: Electrical Analysis - This module covers technical tasks for analysis of fire-induced circuit failures in support of Fire PRA analysis. Specifically, this module covers NUREG/CR-6850 (EPRI 1011989), Volume 2, Sections 3, 9, and 10. The electrical analysis module is geared toward PRA practitioners and fire safe shutdown analysts with a practical understanding of the concepts and methods of fire-induced circuit failure analysis within the context of Fire PRA or Appendix R circuit failure assessments. The course will be conducted with the assumption that students have the following knowledge and skills:

- General circuit design and operational control for typical plant equipment
- Basic circuit analysis techniques for identifying and classifying fire-induced circuit failure modes
- Working knowledge of typical electrical drawings, including one-line diagrams, schematic diagrams, electrical block diagrams,

wiring/connection diagrams, raceway layout drawings, instrument loop diagrams, etc.
- Cable and raceway, 10 CFR Part 50 Appendix R safe shutdown, and Fire PRA database structures and software
- Appendix R safe shutdown circuit analysis
- Progression of events stemming from the EPRI/NRC cable fire testing to characterize fire-induced circuit failures (historical perspective)
- Emerging issues and challenges associated with the analysis of multiple spurious operations

Module 3: Fire Analysis - This module covers technical tasks involving plant partitioning, fire frequency analysis, and the development and analysis of fire scenarios from fire ignition to target impact and fire suppression. Specifically, this module covers NUREG/CR-6850 (EPRI 1011989), Volume 2, Sections 1, 6, 8, and 11. This module is suited for PRA practitioners responsible for treating those aspects of the FPRA specifically related to the fire growth and damage assessment tasks. The course will be conducted with the assumption that students have the following knowledge and skills:

- A general understanding of the fire frequency calculation process as practiced in FPRA,
- Knowledge of general fire protection features and systems as typically implemented at a nuclear power plant (NPP),
- A general understanding of how fire models are used in support of the FPRA (a proficient level of fire model expertise is not required),
- A general understanding of fire behavior and the parameters most important to a fire growth and damage analysis (e.g., concepts such as fire spread, fire heat release rate, target response, and fire suppression and detection analysis).

The course will be held in two sessions:

Session I:
Monday, September 29 (8am-5pm) through Thursday, October 2, 2008 (8am-4pm)

Session II:
Monday, November 17 (8am-5pm) through Thursday, November 20, 2008 (8am-4pm)

Participants can attend only one module per session. Each module is offered once during each session, and that module lasts the full session. When registering, specify your priority module and session date, as space may be limited. Requests for priority on a particular module and session will be accommodated to the extent possible.

Please note that computers are not needed for participation in this course. It is recommended that participants read appropriate sections of NUREG/CR-6850 (EPRI 1011989) corresponding to the selected training module prior to the course. This report may be downloaded from NRC's public website at the following address: http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6850/ or obtained from EPRI website at www.epri.com.

Those interested in attending this workshop should log on to http://www.nrc.gov/public-involve/conference-symposia/epri-fire-pra-course/epri-fire-pra-course-info.html to register or send an email to Kendra Hill at the NRC at Kendra.hill@nrc.gov. The email indicating your interest in this course must contain the following information: Name, work address, e-mail address, and phone number. Registration must be completed by August 15, 2008. Registration for this workshop is required to ensure space availability. If you have any questions, you may contact Ms. Hill at 301-415-5456.

A limited block of rooms at the conference hotel, The Hyatt Regency Bethesda, have been reserved at a discounted rate of $201 plus tax per night (single occupancy) from Sunday through Wednesday night for each session. Reservations for these rates must be made through the Hotels Reservation Department by calling (301) 657-1234 or (800) 233-1234. Reservations should be made under the group name "Fire PRA Training." Reservations must be made by 8/29/08 for Session I and 10/16/08 for session II to receive this discounted rate. Reservation requests received after the cut-off date will be based on availability at the Hotel's prevailing rates.

PARTICIPANTS:	NRC/Contractor	EPRI/Contractor
	J.S. Hyslop	R. Kassawara
	S. Nowlen	B. Najafi
	M. Kazarians	F. Joglar
	J. LaChance	D. Funk
	F. Wyant	R. Anoba

CATEGORY: This meeting is a Category 3 meeting*. The public is invited to participate in this meeting by providing comments and asking questions throughout the meeting. Please note this workshop is being conducted in a classroom format; registration is required to ensure space availability.

The NRC provides reasonable accommodation to individuals with disabilities where appropriate. If you need a reasonable accommodation to participate in this workshop, or need the workshop notice or agenda in another format (e.g., Braille, large print), please notify the NRC's meeting contact. Determinations on requests for reasonable accommodation will be made on a case-by-case basis.

*Meetings between the NRC technical staff and external stakeholders are open for interested members of the public, petitioners, interveners, or other parties to attend as observers pursuant to Commission policy statement, "Enhancing Public Participation in NRC Meetings," 67 *Federal Register* 36920, May 28, 2002.

NRC CONTACT: J.S. Hyslop, phone (301) 415-6354 or e-mail
js.hyslop@nrc.gov
EPRI CONTACT: R. Kassawara, phone (650) 855-2775 or e-mail
rkassawa@epri.com mailto:ask1@nrc.gov.

NRC CONTACT: J.S. Hyslop, phone (301) 415-6354 or e-mail
js.hyslop@nrc.gov
EPRI CONTACT: R. Kassawara, phone (650) 855-2775 or e-mail
rkassawa@epri.com mailto:ask1@nrc.gov.

DISTRIBUTION:
Hard Copy
DRA Chron
Hyslop r/f
K. Hill r/f
PMNS
E-mail:
M. Tschiltz
C. Holden
M. Franovich
M. Rubin
B. Perch
S. Wong
D. Dube
S. Laur
P. Lain
D. Frumkin
G. Parry
J. Circle
R. Radlinski
A. Klein
R. Galluci
Region 1: J. Rogge, C. Cahill, W. Schmidt, W. Cook
Region 2: C. Payne, W. Rogers, R. Bernhard
Region 3: J. Lara, L. Kozak, D. Passehl, S. Burgess
Region 4: L. Smith, D. Loveless, M. Runyan, R. Bywater

ADAMS Accession No.: ML082040168

OFFICE	FRB	FRB	FRB	SUNSI Review	SUNSI Review
NAME	KHill	JHyslop	MSalley	KHill	MSalley
DATE	07/22/08	07/23/08	07/23/08	07/22/08	07/23/08

OFFICIAL RECORD COPY